PATENT COOPERATION TREATY

PCT

INTERNATIONAL PRELIMINARY EXAMINATION REPORT

(PCT Article 36 and Rule 70)

Applicant's or agent's file reference GRF/FP6193338	**FOR FURTHER ACTION**	See Notification of Transmittal of International Preliminary Examination Report (Form PCT/IPEA/416)
International application No. PCT/GB 03/05329	International filing date *(day/month/year)* 05.12.2003	Priority date *(day/month/year)* 06.12.2002
International Patent Classification (IPC) or both national classification and IPC A61K38/17		
Applicant SINGAPORE GENERAL HOSPITAL PTE LTD. et al		

1. This international preliminary examination report has been prepared by this International Preliminary Examining Authority and is transmitted to the applicant according to Article 36.

2. This REPORT consists of a total of 6 sheets, including this cover sheet.

   ☐ This report is also accompanied by ANNEXES, i.e. sheets of the description, claims and/or drawings which have been amended and are the basis for this report and/or sheets containing rectifications made before this Authority (see Rule 70.16 and Section 607 of the Administrative Instructions under the PCT).

   These annexes consist of a total of sheets.

3. This report contains indications relating to the following items:

   - I ☒ Basis of the opinion
   - II ☐ Priority
   - III ☒ Non-establishment of opinion with regard to novelty, inventive step and industrial applicability
   - IV ☐ Lack of unity of invention
   - V ☒ Reasoned statement under Rule 66.2(a)(ii) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement
   - VI ☐ Certain documents cited
   - VII ☐ Certain defects in the international application
   - VIII ☐ Certain observations on the international application

Date of submission of the demand	Date of completion of this report
16.06.2004	08.10.2004
Name and mailing address of the international preliminary examining authority: European Patent Office D-80298 Munich Tel. +49 89 2399 - 0 Tx: 523656 epmu d Fax: +49 89 2399 - 4465	Authorized Officer Deck, A Telephone No. +49 89 2399-8432

INTERNATIONAL PRELIMINARY EXAMINATION REPORT

International application No. PCT/GB 03/05329

I. Basis of the report

1. With regard to the **elements** of the international application *(Replacement sheets which have been furnished to the receiving Office in response to an invitation under Article 14 are referred to in this report as "originally filed" and are not annexed to this report since they do not contain amendments (Rules 70.16 and 70.17))*:

Description, Pages

1-152 as originally filed

Sequence listings part of the description, Pages

1-65 received on 23.04.2004 with letter of 20.04.2004

Claims, Numbers

1-62 as originally filed

Drawings, Sheets

1/42-42/42 as originally filed

2. With regard to the **language**, all the elements marked above were available or furnished to this Authority in the language in which the international application was filed, unless otherwise indicated under this item.

   These elements were available or furnished to this Authority in the following language: , which is:

   ☐ the language of a translation furnished for the purposes of the international search (under Rule 23.1(b)).

   ☐ the language of publication of the international application (under Rule 48.3(b)).

   ☐ the language of a translation furnished for the purposes of international preliminary examination (under Rule 55.2 and/or 55.3).

3. With regard to any **nucleotide and/or amino acid sequence** disclosed in the international application, the international preliminary examination was carried out on the basis of the sequence listing:

   ☐ contained in the international application in written form.

   ☐ filed together with the international application in computer readable form.

   ☒ furnished subsequently to this Authority in written form.

   ☒ furnished subsequently to this Authority in computer readable form.

   ☒ The statement that the subsequently furnished written sequence listing does not go beyond the disclosure in the international application as filed has been furnished.

   ☒ The statement that the information recorded in computer readable form is identical to the written sequence listing has been furnished.

4. The amendments have resulted in the cancellation of:

   ☐ the description, pages:

   ☐ the claims, Nos.:

   ☐ the drawings, sheets:

5. ☐ This report has been established as if (some of) the amendments had not been made, since they have been considered to go beyond the disclosure as filed (Rule 70.2(c)).

   (Any replacement sheet containing such amendments must be referred to under item 1 and annexed to this report.)

6. Additional observations, if necessary:

III. Non-establishment of opinion with regard to novelty, inventive step and industrial applicability

1. The questions whether the claimed invention appears to be novel, to involve an inventive step (to be non-obvious), or to be industrially applicable have not been examined in respect of:

   ☐ the entire international application,

   ☒ claims Nos. 16-18, 27-62

   because:

   ☒ the said international application, or the said claims Nos. 16-18 relate to the following subject matter which does not require an international preliminary examination (specify):

   see separate sheet

   ☐ the description, claims or drawings *(indicate particular elements below)* or said claims Nos. are so unclear that no meaningful opinion could be formed *(specify)*:

   ☐ the claims, or said claims Nos. are so inadequately supported by the description that no meaningful opinion could be formed.

   ☒ no international search report has been established for the said claims Nos. 27-62

2. A meaningful international preliminary examination cannot be carried out due to the failure of the nucleotide and/or amino acid sequence listing to comply with the standard provided for in Annex C of the Administrative Instructions:

   ☐ the written form has not been furnished or does not comply with the Standard.

   ☐ the computer readable form has not been furnished or does not comply with the Standard.

V. Reasoned statement under Article 35(2) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement

1. Statement

Novelty (N)	Yes:	Claims	1-26
	No:	Claims	
Inventive step (IS)	Yes:	Claims	1-26
	No:	Claims	
Industrial applicability (IA)	Yes:	Claims	SEE SEPARATE SHEET
	No:	Claims	

2. Citations and explanations

see separate sheet

Concerning section III

1. Claims 16-18 relate to subject-matter considered by this Authority to be covered by the provisions of Rule 67.1(iv) PCT. Consequently, no opinion will be formulated with respect to the industrial applicability of the subject-matter of these claims (Article 34(4)(a)(I) PCT).

2. As only the first group of invention (claims 1-26) indicated in the international search report has been the subject of a search, the examination is carried out on claims 1-26.

Concerning section V

1. The following documents are referred to in this communication; the numbering will be adhered to in the rest of the procedure:

   D1: US-B-6 465 2101 (PELES ELIOR) 15 October 2002 (2002-10-15)
   D2: WO 00/05364 A (SMITHKLINE BEECHAM PLC) 3 February 2000 (2000-02-03)
   D3: WO 01/36631 A (SMITHKLINE BEECHAM PLC) 25 May 2001 (2001-05-25)
   D4: BHAT M A ET AL: "Axon-glia interactions and the domain organization of myelinated axons requires neurexin IV/Caspr/Paranodin." NEURON. UNITED STATES MAY 2001, vol. 30, no. 2, May 2001 (2001-05), pages 369-383, XP002276824 ISSN: 0896-6273
   D5: HAUBEN EHUD ET AL: "Vaccination with a Nogo-A-derived peptide after incomplete spinal-cord injury promotes recovery via a T-cell-mediated neuroprotective response: Comparison with other myelin antigens" PROCEEDINGS OF THE NATIONAL ACADEMY OF SCIENCES OF USA, NATIONAL ACADEMY OF SCIENCE. WASHINGTON, US, vol. 98, no. 26, 18 December 2001 (2001-12-18), pages 15173-15178, XP002244559 ISSN: 0027-8424

   Unless indicated otherwise reference is made to the relevant passages emphasized in the search report.

2. D1 discloses the protein Caspr/p190, but does not disclose the combination Nogo+Caspr.

D2 discloses the proteins Nogo A and B, but does not disclose the combination Nogo+Caspr.

D3 discloses the protein Nogo C, but does not disclose the combination Nogo+Caspr.

D4 is a scientific publication which discloses the role of Caspr at the axon level. D4 does not mention any role for Nogo.

D5 is a scientific publication which discloses that vaccination with Nogo-A promotes recovery from spinal cord injury. No mention of Caspr.

None of the prior art discloses the combination of Nogo and Caspr in a pharmaceutical composition, nor the screening for substances which modulate the interaction between Nogo and Caspr. Hence the subject-matter of claims 1-26 meets the requirements of Art. 33(2) PCT.

3. The claimed invention is based on the discovery that Nogo and Caspr associate in the paranodes and control K+ channels. This interaction is thought to play a role in myelination.
This teaching is neither disclosed nor suggested in the prior art, hence the subject-matter is considered to make an inventive contribution to the art.

4. Remark: claims 15, 25 and 26 are unacceptable under Art. 5 and 6 PCT. They are so called "reach-through" claims wherein protection is sought for embodiments not yet identified. No examples are disclosed in the application as originally filed for the claimed substances, hence this subject-matter cannot pretend to patent protection.

5. For the assessment of the present claims 16-18 on the question whether they are industrially applicable, no unified criteria exist in the PCT Contracting States. The patentability can also be dependent upon the formulation of the claims. The EPO, for example, does not recognize as industrially applicable the subject-matter of claims to the use of a compound in medical treatment, but may allow, however, claims to a known compound for first use in medical treatment and the use of such a compound for the manufacture of a medicament for a new medical treatment.